ABSTRACT

The present invention provides a high-strength steel sheet useful for applications to automobile steel sheets and the like and having excellent deep drawability, a tensile strength (TS) of as high as 440 MPa or more, and a high r value (average r value $\geq$ 1.2), and a process for producing the steel sheet. The steel sheet has a composition containing, by % by mass, 0.010 to 0.050% of C, 1.0% or less of Si, 1.0 to 3.0% of Mn, 0.005 to 0.1% of P, 0.01% or less of S, 0.005 to 0.5% of Al, 0.01% or less of N, and 0.01 to 0.3% of Nb, the Nb and C contents in steel satisfying the relation, (Nb/93)/(C/12) = 0.2 to 0.7, and the balance substantially including Fe and inevitable impurities. The steel microstructure contains a ferrite phase and a martensite phase at area ratios of 50% or more and 1% or more, respectively, and the average r value is 1.2 or more.